

## **REMARKS**

Claims 12, 19, 30, 35, and 40 have been amended. Thus, Claims 12-44 are pending in this application.

### **I. Drawings**

The Examiner objected to the drawings for not showing every feature of claims 19, 30, and 40. Applicant amended claims 19, 30, and 40 to more clearly define the respective limitation. These claims refer to the feature of how at least a part of the channel within the cooling loop is formed. In particular, this limitation refers to the fact that the device forms one wall of a cooling channel whereas the remaining walls of the channel are formed by the PCB. Figures 4, 5, 6, and 8 show this limitation as the device is formed by elements 202-208.

### **II. Claim Objections under 35 U.S.C. §112**

Claims 13, 19, and 35 have been objected to because of informalities. Applicant thanks the Examiner for pointing out these informalities. Claim 12, as amended, now defines "a channel." Thus, claims 13, and 19 do not lack antecedent basis anymore. Furthermore, claim 35 has been amended to define the term "loop" correctly.

### **III. Claim Rejection under 35 U.S.C. §102**

The Examiner rejected claims 12-22, 24-33, 35-39, and 40-43 under 35 U.S.C. §102(b) as being anticipated by Little. The Examiner stated that Little teaches an assembly having all the limitations of the above mentioned claims. Applicant respectfully disagrees. The rejected claims comprises limitations neither shown nor suggested by Little.

According to the independent claims 12, 24, and 35, the thermal management system includes a printed circuit board (PCB) as a carrier or support structure for the heat generating device. Thus, the printed circuit board provides for support of the electronic device as well as for electrical connection, for example to other devices or for interconnection of certain pins of the device.

Little does neither disclose nor suggest the use of a printed circuit board. On the contrary, Little teaches the use of a thermally highly conductive material as a carrier. Throughout the specification of Little, such a material is preferably made of glass. See e.g. col.

5, lines 47-52; col. 6, lines 31-32; col. 7, lines 27-38. Thus, such a support element cannot provide any connections to the respective device. Additional connecting means have to be provided.

The Examiner rejected claims 12-16, 18-19, 21-27, 29-37 and 39-44 under 35 U.S.C. §102(b) as being anticipated by Denney. The Examiner stated that Denney teaches an assembly having all the limitations of the above mentioned claims. Applicant respectfully disagrees. The rejected claims comprises limitations neither shown nor suggested by Denney.

As stated above, the independent claims 12, 24, and 35 include the limitation of a printed circuit board (PCB). Denney clearly teaches away from the use of a printed circuit board as a carrier for a device to be cooled by a coolant circulation system. Denney particularly discloses in col. 1, lines 56-64, that the rigid nature of traditional circuit boards makes it difficult to arrange them in three dimensional space to ensure that the cooling fluid reaches the component. Therefore, Denney proposes to use flexible printed wiring devices. Due to the flat nature of these flexible devices, the cooling channels cannot be arranged within the flexible device but rather is arranged between two layers of these flexible devices. See col. 3, lines 50-52. Thus, Denney clearly lacks the limitation of a printed circuit board and the limitation that the cooling channel is arranged within the printed circuit board.

The dependent claims 13-23, 25-34, and 36-44 are dependent claims and, thus, include all the limitations of the respective independent claims. Therefore, these claims are patentable at least to the extent of the respective independent claims.

### **SUMMARY**

In light of the above remarks, reconsideration and withdrawal of the outstanding rejection is respectfully requested. It is further submitted that the application is now in condition for allowance and early notice of the same is earnestly solicited. Should the Examiner have any questions, comments or suggestions in furtherance of the prosecution of this application, the Examiner is invited to contact the agent of record by telephone or facsimile.


Applicants do not believe that any other fees are due at this time; however, should any fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason relating to this document, the

Commissioner is authorized to deduct the fees from Deposit Account No. 02-0383, (*formerly Baker & Botts, L.L.P.*) Order Number 068736.0111.

Respectfully submitted,

BAKER BOTTS L.L.P.

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